The listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

Claim 1 (currently amended) An electronic compass comprising:

a coil comprising a core and a pair of contacts, the core for alternating between a first magnetically saturated state and a second magnetically saturated state in response to a time-varying current signal applied to the contacts and an external magnetic field, the second magnetically saturated state having an opposite polarity to the first magnetically saturated state; and,

an integrated circuit comprising two contacts and disposed on a substrate, the contacts of the integrated circuit electrically coupled to the contacts of the coil, the two contacts of the integrated circuit comprising a current source ~~both~~ for providing a differential periodic ~~the~~ time-varying current signal and absent a series resistor for converting a voltage signal to the differential periodic time-varying current signal across the coil and a sensor circuit coupled across the coil for receiving a time-varying voltage signal, the time-varying voltage signal having a duty cycle dependant upon an orientation of the coil relative to the external magnetic field.

Claim 2 (currently amended) An electronic compass according to claim 1, wherein the differential periodic time-varying current signal is a triangular wave current signal.

Claim 3 (original) An electronic compass according to claim 1, wherein the integrated circuit comprises: square wave to triangular wave converter.

Claim 4 (original) An electronic compass according to claim 1, wherein the integrated circuit comprises: a triangular wave generator.

Claim 5 (original) An electronic compass according to claim 1, wherein the coil is a component integrated on a second substrate.

Claim 6 (original) An electronic compass according to claim 1, wherein the coil is integrated on a same substrate as the integrated circuit.

Claim 7 (original) An electronic compass according to claim 1, comprising a second coil, the second coil comprising a second core and a second pair of contacts, the second core for alternating between a third magnetically saturated state and a fourth magnetically saturated state in response to a time-varying current signal applied to the second pair of contacts and the external magnetic field, the fourth magnetically saturated state having an opposite polarity to the third magnetically saturated state, the second coil disposed at a substantially non-zero angle relative to the first coil.

Claim 8 (original) An electronic compass according to claim 7, comprising a third coil, the third coil comprising a third core and a third pair of contacts, the third core for alternating between a fifth magnetically saturated state and a sixth magnetically saturated state in response to a time-varying current signal applied to the third pair of contacts and the external magnetic field, the sixth magnetically saturated state having an opposite polarity to the fifth magnetically saturated state, the third coil disposed at a substantially non-zero angle relative to both the first coil and the second coil.

Claim 9 (original) A method of determining a direction of the Earth's magnetic field comprising:

using an integrated circuit to provide a current signal to a coil via a pair of contacts, the coil comprising a core;

monitoring a voltage potential between the pair of contacts;

determining a duty cycle associated with a first electromagnetic saturation of the core, and a second electromagnetic saturation of the core, the second electromagnetic saturation of the core having an opposite polarity to the first electromagnetic saturation; and,

determining a direction based upon characteristics of the current signal, and the duty cycle.

Claim 10 (original) A method according to claim 9, wherein in the step of using an integrated circuit, the integrated circuit provides a triangular output signal.

Claim 11 (original) A method according to claim 9, wherein in the step of monitoring a voltage potential the voltage potential is monitored using an integrated circuit.

Claim 12 (original) A method according to claim 9, wherein in the step of monitoring a voltage potential the voltage potential is monitored using the integrated circuit described in the step of using an integrated circuit.

Claim 13 (currently amended) An electronic component comprising:

an integrated circuit comprising two contacts and disposed on a substrate, the two contacts of the integrated circuit for being electrically coupled to a pair of contacts of a coil, the two contacts of the integrated circuit both for providing a differential periodic time-varying current signal and for receiving a time-varying voltage signal, the integrated circuit for use in determining an orientation relative to an external magnetic field.

Claim 14 (currently amended) An electronic component according to claim 13, wherein the differential periodic time-varying current signal is a triangular wave current signal.

Claim 15 (original) An electronic component according to claim 13, wherein the integrated circuit comprises: square wave to triangular wave converter.

Claim 16 (original) An electronic component according to claim 13, wherein the integrated circuit comprises: a triangular wave generator.

Claim 17 (original) An electronic component according to claim 13, comprising the coil, wherein the coil is a component integrated on a second substrate.

Claim 18 (original) An electronic component according to claim 13, comprising the coil, wherein the coil is integrated on a same substrate as the integrated circuit.

Claim 19 (original) An electronic component according to claim 13, comprising the coil and a second coil, the second coil comprising a second core and a second pair of contacts, the second core for alternating between a third magnetically saturated state and a fourth magnetically saturated state in response to a time-varying current signal applied to the second pair of contacts and the external magnetic field, the fourth magnetically saturated state having an opposite polarity to the third magnetically saturated state, the second coil disposed at a substantially non-zero angle relative to the first coil.

Claim 20 (original) An electronic component according to claim 19, comprising a third coil, the third coil comprising a third core and a third pair of contacts, the third core for alternating between a fifth magnetically saturated state and a sixth magnetically saturated state in response to a time-varying current signal applied to the third pair of contacts and the external magnetic field, the sixth magnetically saturated state having an opposite polarity to the fifth magnetically saturated state, the third coil disposed at a substantially non-zero angle relative to both the first coil and the second coil.